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EXAMINER	
OJURONGBE, OLATUNDE S	
ART UNIT	**PAPER NUMBER**
1796	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents.admin@dowcorning.com

Office Action Summary	Application No.	Applicant(s)	
	10/581,765	EKELAND ET AL.	
	Examiner	Art Unit	
	OLATUNDE S. OJURONGBE	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) *1-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-10* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20060606*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

(i) all the embodiments of the invention directed to the organosiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_3SiO_{1/2}$ units and $SiO_{4/2}$ units;

(ii) all the embodiments of the invention directed to the organsiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units;

(iii) all the embodiments of the invention directed to the organsiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $SiO_{4/2}$ units;

(iv) all the embodiments of the invention directed to the organsiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units;

(v) all the embodiments of the invention directed to the organsiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_2SiO_{2/2}$ units and $R^1SiO_{3/2}$ units;

(vi) all the embodiments of the invention directed to the organsiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_2SiO_{2/2}$ units and $R^2_3SiO_{1/2}$ units;

(vii) all the embodiments of the invention directed to the organsiloxane containing an average of greater than two alkenyl groups per molecule comprising $R^2_2SiO_{2/2}$ units, $R^2_3SiO_{1/2}$ units and $SiO_{2/2}$ units;

(viii) all the embodiments of the invention directed to the organohydrogensilicon compound having the formula $HR^3_2SiR^4SiR^3_2H$;

(ix) all the embodiments of the invention directed to the organohydrogensilicon compound having the formula $(HR^3_aSiO_{(3-a)/2})_b(R^1_cSiO_{(4-c)/2})_d$;

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

2. The claims are deemed to correspond to the species listed above in the following manner:

each claim is directed to one or more of the species.

The following claim(s) are generic: there is no generic claim.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: the chemical structure of each species is distinct.

3. During a telephone conversation with Timothy Troy on 07/18/2008, a provisional election was made with traverse to prosecute the invention of species (ii) & (viii) and species (vi) & (ix) respectively, claims 1-10 . Affirmation of this election must be made by applicant in replying to this Office action.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

5. The disclosure is objected to because of the following informalities:

The specification cites $SiO_{2/2}$ in page 10, line 12, this is not a conventional term in the art; if the applicant chooses to use his or her term, a definition of the term must be included in the disclosure.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are directed to an organosiloxane compound containing an average of greater than two alkenyl groups per molecule comprising $SiO_{2/2}$ units; $SiO_{2/2}$ is not a conventional term in the art and no definition of the term is made in the specification.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. **Claims 1-2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (US 6,509,423) in view of McGarry et al (US 6,660,395).

Regarding **claim 1**, Zhu teaches a silicone composition (col.3, lines 30-31) comprising:

100 parts by weight of an organopolysiloxane resin containing an average of greater than two alkenyl groups per molecule and having less than 1.5 mol % of silicon-bonded hydroxy groups (col.3, lines 32-36), wherein the resin is selected from a group including:

- a copolymer consisting essentially of $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units, wherein the mole ratio of $R^2_3SiO_{1/2}$ units to $R^1SiO_{3/2}$ units is from 0.05 to 3.0 (col.3, lines 37-39);
- a copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2_2SiO_{2/2}$ units, wherein the mole ratio of $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2_2SiO_{2/2}$ units is 0.5 to 99 (col.3, lines 46-51).

Zhu further exemplifies crosslinking agents for the composition to include 1, 4-bis(dimethylsilyl)benzene (col.13, line 64) and an organohydrogensiloxane having the formula $PhSi(OSiMe_2H)_3$ (col.14, lines 1-2) and further teaches the composition comprising an effective amount of an inorganic filler (col.2, line 63) and a catalytic amount of a hydrosilylation catalyst (col.2, line 64).

Zhu further exemplifies a mixture of an organopolysiloxane resin wherein the resin consists essentially of $CH_2=CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A) with 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60); this serves as the silicone composition (X) of the instant claim, wherein Resin A

and crosslinking agent A serve as the organosiloxane compound A(ii) and the organohydrogensilicon compound B(i) of the instant claim respectively.

Though Zhu does not explicitly teach the silicone composition (Y) of the instant claim, since the list of organopolysiloxane resin and crosslinking agents taught by Zhu is limited, one of ordinary skill in the art would have formed different variations of the organopolysiloxane/crosslinking agent compositions, including one with the copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units with $PhSi(OSiMe_2H)_3$ as the crosslinking agent, by routine experimentation; wherein the copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units and the $PhSi(OSiMe_2H)_3$ crosslinking agent the serve as the organosiloxane compound A'(i) and the organohydrogensiloxane compound B'(ii) of the instant claim respectively. This composition serves as the silicone composition (Y) of the instant claim.

Modified Zhu does not teach a silicone coating composition comprising a first coating layer comprising the silicone composition (X) and a second coating layer in contact with coating layer (I) comprising of the silicone composition (Y).

McGarry et al teaches fiber reinforced resin composites having silicone matrix resin, where the composite layers are interleaved with a thin silicone layer of compliant impact resistant material (col.1, lines 8-12).

McGarry et al further teaches the units of the matrix resin and interleaf resin (col.3, lines 22-30), exemplifying $(PhSiO3/2)_{0.75}$ $(ViMe2SiO1/2)_{0.25}$ as a suitable silsesquioxane copolymer for the invention (col.3, lines 54-57) and that the interleaf resin is chosen for

its compatibility with the matrix resin (col.3, lines 9-10) and will typically contain a smaller portion of trifunctional siloxane groups than the matrix resin (col.2, lines 29-31). McGarry et al further teaches that the object of the invention is to provide an improved silicone resin-based laminated composite displaying higher toughness and impact resistant. (col.1, lines 40-43).

Since the composition of modified Zhu is similar to that of McGarry et al and the composition of modified Zhu, among other advantages, cures to form a silicone product having low CTE, superior fracture toughness and low VOC (col.10, line 47- col.11, line 1), one of ordinary skill in the art would have incorporated the composition of modified Zhu into the fiber reinforced resin composite of McGarry et al, using the copolymer that serves as the silicone composition (X) of the instant claim as the matrix resin, and the copolymer having a lower portion of trifunctional siloxane group, that serves as the silicone composition (Y) of the instant claim as the interleaf, in order to have a composite with superior fracture toughness, low CTE and very low VOC, thereby among other things, avoiding the health, safety and environmental hazards associated with solvent-borne silicone compositions.

Though modified Zhu does not teach that the surface energy of composition (Y) is lower than composition (X), the surface energy of a composition is an inherent property of the composition; since the silicone compositions taught by modified Zhu meet the limitations of the corresponding compositions (X) and (Y) of the instant claim, the property the applicant claims is inherently present.

Regarding **claim 2**, modified Zhu teaches all the claim limitations as set forth above. In the CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units of the organosiloxane that serves as A(ii), the corresponding crosslinking agent, bis(dimethylsilyl)benzene that serves as B(i) and $PhSi(OSiMe_2H)_3$, the crosslinking agent that serves as B'(ii) for the organosiloxane compound (Y), the hydrocarbon group free of aliphatic unsaturation is either methyl or phenyl and the alkenyl group is vinyl.

Though modified Zhu does not teach the silicone composition wherein the hydrocarbon group free of aliphatic unsaturation for the organosiloxane compound, A'(i) of the silicone composition (Y) is independently selected from methyl and phenyl and the alkenyl group is vinyl, one of ordinary skill in the art would have chosen these groups based on the units of CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Example 6, col.15, lines 48-60) and other taught examples of the invention(col.5, lines 17-22).

10. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (US 6,509,423) in view of McGarry et al (US 6,660,395) as applied to claim 1 above, in further view of Fujiki et al (US 5,013,772).

Regarding **claim 3**, modified Zhu teaches all the claim limitations as set forth above. The copolymer consisting essentially of CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A) and 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60) serve as A(ii) and B(i) of the instant claim respectively; the copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2{}_2SiO_{2/2}$ units, wherein the mole ratio of $R^2{}_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2{}_2SiO_{2/2}$ units

is 0.5 to 99 (col.3, lines 46-51) and $PhSi(OSiMe_2H)_3$ serve as A'(i) and B'(ii) of the instant claim respectively; modified Zhu further teaches complexes of chloroplatinic acid as preferred hydrosilylation catalyst (col.9, lines 13-19) and a list of examples of inorganic fillers for the composition of the invention (col.7, line 66- col.8, line 17).

Though modified Zhu does not teach the composition wherein the B'(ii) is the organohydrogensiloxane compound of the instant claim, since the hydrocarbon group free of aliphatic unsaturation of the compounds in the examples of the invention is either methyl or phenyl, one of ordinary skill in the art would have used different variations of the organohydrogensiloxane compound, including one in which all the hydrocarbon groups are methyl by routine experimentation.

Though modified Zhu does not teach the organosiloxane compound (A') of the instant claim, modified Zhu further teaches that the interleaf silicone resin adds toughness, and impact strength to the composite (McGarry et al, col.2, lines 9-11).

Fujiki et al teaches an addition curable type silicone rubber composition containing MQ, MDQ and/or MDTQ resins in order to have a high tensile strength and tear strength silicone rubber composition (col.1, lines 54-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated M and Q siloxane units into the organosiloxane compound of modified Zhu which serves as A' of the instant claim, while still maintaining the combined $R^2{}_3SiO_{1/2}$ units with $R^1SiO_{3/2}$ units to $R^2{}_2SiO_{2/2}$ units ratio, in order to have an interleaf silicone resin with a high tensile and tear strength. Moreover, one of ordinary skill in the art would have used methyl group and vinyl group for the

hydrocarbon group free of aliphatic unsaturation and the alkenyl group respectively because the example taught by Fujiki et al contains these groups.

11. **Claims 4-5, 7-8 and 10,** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (US 6,509,423) in view of Nuzzo et al (US 6,805,809).

Regarding **claim 4**, Zhu teaches a silicone composition (col.3, lines 30-31) comprising:

100 parts by weight of an organopolysiloxane resin containing an average of greater than two alkenyl groups per molecule and having less than 1.5 mol % of silicon-bonded hydroxy groups (col.3, lines 32-36), wherein the resin is selected from a group including:

- a copolymer consisting essentially of $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units, wherein the mole ratio of $R^2_3SiO_{1/2}$ units to $R^1SiO_{3/2}$ units is from 0.05 to 3.0 (col.3, lines 37-39);
- a copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2_2SiO_{2/2}$ units, wherein the mole ratio of $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2_2SiO_{2/2}$ units is 0.5 to 99 (col.3, lines 46-51).

Zhu further exemplifies crosslinking agents for the composition to include 1, 4-bis(dimethylsilyl)benzene (col.13, line 64) and an organohydrogensiloxane having the formula $PhSi(OSiMe_2H)_3$ (col.14, lines 1-2) and further teaches the composition comprising an effective amount of an inorganic filler (col.2, line 63) and a catalytic amount of a hydrosilylation catalyst (col.2, line 64).

Zhu further exemplifies a mixture of an organopolysiloxane resin wherein the resin consists essentially of $CH_2=CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A)

with 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60); this serves as the silicone composition (X) of the instant claim, wherein Resin A and crosslinking agent A serve as the organosiloxane compound A(ii) and the organohydrogensilicon compound B(i) of the instant claim respectively.

Though Zhu does not explicitly teach the silicone composition (Y) of the instant claim, since the list of organopolysiloxane resin and crosslinking agents taught by Zhu is limited, one of ordinary skill in the art would have formed different variations of the organopolysiloxane/crosslinking agent compositions, including one with the copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units with $PhSi(OSiMe_2H)_3$ as the crosslinking agent, by routine experimentation; wherein the copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units and the $PhSi(OSiMe_2H)_3$ crosslinking agent the serve as the organosiloxane compound A'(i) and the organohydrogensiloxane compound B'(ii) of the instant claim respectively. This composition serves as the silicone composition (Y) of the instant claim.

Though modified Zhu does not teach a method of making an article of manufacture comprising the steps of the instant claim, modified Zhu further teaches the advantages of the silicone composition of the invention to include very low volatile organic compound content, less shrinkage during curing, curing rapidly at temperatures from room temperature to moderately elevated temperatures without the formation of detectable by product and superior fracture toughness (col.10, line 47-col.11, line 1). Modified Zhu further teaches the composition having low flexural modulus (see Examples, TABLE 1, col.16, lines 35-45).

Nuzzo et al teaches providing a microstructure embodiment comprising a substrate, a patterned silicon-containing elastomer and a top layer comprising a silicon-containing elastomer (col.2, lines 60-63), by:

- depositing a material used to make a patterned silicon-containing elastomer film on a master (col.10, lines 63-65); elastomer precursors such as uncrosslinked polymer can be deposited onto a master and polymerization and/or crosslinking can then provide the patterned silicon-containing elastomer (col.8, lines 60-64), an example of which is the deposition of PDMS prepolymer to a thickness of 2.8 micrometers on a master (col.14, lines 65-66);
- depositing an elastomer precursor that allows a solid elastomer, the transfer pad, to be formed on the patterned silicon-containing elastomer (col.11, lines 12-16 and FIG. 3)
- separating the transfer pad from the master (col.11, lines 16-17).

Nuzzo et al further teaches suitable transfer pad material to include silicon-containing elastomers (col.8, lines 26-30) and polysiloxanes as examples of silicon-containing elastomers (col.5, lines 1-6).

Based on the low flexural modulus of the composition of modified Zhu, it can be inferred that the composition is a silicon-containing elastomer.

Considering the advantages of the composition of modified Zhu, particularly that the composition cures rapidly into a very low VOC, with superior fracture toughness product even at room temperature, one of ordinary skill in the art would have incorporated the composition of modified Zhu into the invention of Nuzzo et al as the patterned silicon-

containing elastomer and the transfer pad; such incorporation would have amounted to nothing more than the use of a known element for its intended use in a known environment.

Though modified Zhu does not teach a method of making an article of manufacture comprising the steps of:

- (I) applying the silicone composition (Y) to a substrate;
- (IV) applying the silicone composition (X) over the pattern of step (III).

Since the organopolysiloxane/crosslinking agent combinations taught by modified Zhu is limited, one of ordinary skill in the art would have formed different variations of the microstructure composition, including one in which the organopolysiloxane/crosslinking agent composition serves as composition (Y) of the instant claim is applied to the master (substrate) and the organopolysiloxane/crosslinking agent composition which serves as composition (X) is applied in step (IV) by routine experimentation.

Though modified Zhu does not teach a method of making an article of manufacture comprising the step of applying the silicone composition (Y) to a substrate to form a coating 1 to 500 micrometer thick, since modified Zhu teaches an example in which 2.8 micrometers of PDMS formed on the master (col.14, lines 65-66), one of ordinary skill in the art would have formed the silicone composition (Y) on the master at the same thickness.

Though modified Zhu does not teach that the surface energy of cured composition (Y) is lower than the cured composition (X), the surface energy of a composition is an inherent property of the composition; since the silicone compositions taught by modified Zhu

meet the limitations of the corresponding compositions (X) and (Y) of the instant claim, the property the applicant claims is inherently present.

Regarding **claim 5**, modified Zhu teaches all the claim limitations as set forth above. In the CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units of the organosiloxane that serves as A(ii), the corresponding crosslinking agent, bis(dimethylsilyl)benzene that serves as B(i) and $PhSi(OSiMe_2H)_3$, the crosslinking agent that serves as B'(ii) for the organosiloxane compound (Y), the hydrocarbon group free of aliphatic unsaturation is either methyl or phenyl and the alkenyl group is vinyl.

Though modified Zhu does not teach the method of making an article of manufacture wherein the hydrocarbon group free of aliphatic unsaturation for the organosiloxane compound, A'(i) of the silicone composition (Y) is independently selected from methyl and phenyl and the alkenyl group is vinyl, one of ordinary skill in the art would have chosen these groups based on the units of CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Example 6, col.15, lines 48-60) and other taught examples of the invention(col.5, lines 17-22).

Regarding **claim 7**, Zhu teaches a silicone composition (col.3, lines 30-31) comprising:

100 parts by weight of an organopolysiloxane resin containing an average of greater than two alkenyl groups per molecule and having less than 1.5 mol % of silicon-bonded hydroxy groups (col.3, lines 32-36), wherein the resin is selected from a group including:

- a copolymer consisting essentially of $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units, wherein the mole ratio of $R^2_3SiO_{1/2}$ units to $R^1SiO_{3/2}$ units is from 0.05 to 3.0 (col.3, lines 37-39);

- a copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2_2SiO_{2/2}$ units, wherein the mole ratio of $R^2_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2_2SiO_{2/2}$ units is 0.5 to 99 (col.3, lines 46-51).

Zhu further exemplifies crosslinking agents for the composition to include 1, 4-bis(dimethylsilyl)benzene (col.13, line 64) and an organohydrogensiloxane having the formula $PhSi(OSiMe_2H)_3$ (col.14, lines 1-2) and further teaches the composition comprising an effective amount of an inorganic filler (col.2, line 63) and a catalytic amount of a hydrosilylation catalyst (col.2, line 64).

Zhu further exemplifies a mixture of an organopolysiloxane resin wherein the resin consists essentially of $CH_2=CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A) with 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60); this serves as the silicone composition (X) of the instant claim, wherein Resin A and crosslinking agent A serve as the organosiloxane compound A(ii) and the organohydrogensilicon compound B(i) of the instant claim respectively.

Though Zhu does not explicitly teach the silicone composition (Y) of the instant claim, since the list of organopolysiloxane resin and crosslinking agents taught by Zhu is limited, one of ordinary skill in the art would have formed different variations of the organopolysiloxane/crosslinking agent compositions, including one with the copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units with $PhSi(OSiMe_2H)_3$ as the crosslinking agent, by routine experimentation; wherein the

copolymer consisting essentially of $R^2_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2_2SiO_{2/2}$ units and the $PhSi(OSiMe_2H)_3$ crosslinking agent the serve as the organosiloxane compound A'(i) and the organohydrogensiloxane compound B'(ii) of the instant claim respectively. This composition serves as the silicone composition (Y) of the instant claim.

Though modified Zhu does not teach a method of making an article of manufacture comprising the steps of the instant claim, modified Zhu further teaches the advantages of the silicone composition of the invention to include very low volatile organic compound content, less shrinkage during curing, curing rapidly at temperatures from room temperature to moderately elevated temperatures without the formation of detectable by product and superior fracture toughness (col.10, line 47-col.11, line 1). Modified Zhu further teaches the composition having low flexural modulus (see Examples, TABLE 1, col.16, lines 35-45).

Nuzzo et al teaches providing a microstructure embodiment comprising a substrate, a patterned silicon-containing elastomer and a top layer comprising a silicon-containing elastomer (col.2, lines 60-63), by:

- depositing a material used to make a patterned silicon-containing elastomer film on a master (col.10, lines 63-65); elastomer precursors such as uncrosslinked polymer can be deposited onto a master and polymerization and/or crosslinking can then provide the patterned silicon-containing elastomer (col.8, lines 60-64), an example of which is the deposition of PDMS prepolymer to a thickness of 2.8 micrometers on a master (col.14, lines 65-66);

- depositing an elastomer precursor that allows a solid elastomer, the transfer pad, to be formed on the patterned silicon-containing elastomer (col.11, lines 12-16 and FIG. 3)
- separating the transfer pad from the master (col.11, lines 16-17).

Nuzzo et al further teaches suitable transfer pad material to include silicon-containing elastomers (col.8, lines 26-30) and polysiloxanes as examples of silicon-containing elastomers (col.5, lines 1-6).

Based on the low flexural modulus of the composition of modified Zhu, it can be inferred that the composition is a silicon-containing elastomer.

Considering the advantages of the composition of modified Zhu, particularly that the composition cures rapidly into a very low VOC, with superior fracture toughness product even at room temperature, one of ordinary skill in the art would have incorporated the composition of modified Zhu into the invention of Nuzzo et al as the patterned silicon-containing elastomer and the transfer pad; such incorporation would have amounted to nothing more than the use of a known element for its intended use in a known environment.

Though modified Zhu does not teach a method of making an article of manufacture comprising the steps of:

- (I) applying the silicone composition (X) to a substrate;
- (IV) applying the silicone composition (Y) over the pattern of step (III).

Since the organopolysiloxane/crosslinking agent combinations taught by modified Zhu is limited, one of ordinary skill in the art would have formed different variations of the

microstructure composition, including one in which the organopolysiloxane/crosslinking agent composition serves as composition (X) of the instant claim is applied to the master (substrate) and the organopolysiloxane/crosslinking agent composition which serves as composition (Y) is applied in step (IV) by routine experimentation.

Though modified Zhu does not teach a method of making an article of manufacture comprising the step of applying the silicone composition (X) to a substrate to form a coating 1 to 500 micrometer thick, since modified Zhu teaches an example in which 2.8 micrometers of PDMS is formed on the master (col.14, lines 65-66), one of ordinary skill in the art would have deposited the silicone composition (X) on the master to form the same thickness.

Though modified Zhu does not teach that the surface energy of cured composition (X) is lower than the cured silicone composition (Y), the surface energy of a composition is an inherent property of the composition; since the silicone compositions taught by modified Zhu meet the limitations of the corresponding compositions (X) and (Y) of the instant claim, the property the applicant claims is inherently present.

Regarding **claim 8**, modified Zhu teaches all the claim limitations as set forth above. In the CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units of the organosiloxane that serves as A(ii), the corresponding crosslinking agent, bis(dimethylsilyl)benzene that serves as B(i) and $PhSi(OSiMe_2H)_3$, the crosslinking agent that serves as B'(ii) for the organosiloxane compound (Y), the hydrocarbon group free of aliphatic unsaturation is either methyl or phenyl and the alkenyl group is vinyl.

Though modified Zhu does not teach the method of making an article of manufacture wherein the hydrocarbon group free of aliphatic unsaturation for the organosiloxane compound, A'(i) of the silicone composition (Y) is independently selected from methyl and phenyl and the alkenyl group is vinyl, one of ordinary skill in the art would have chosen these groups based on the units of $CH_2=CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Example 6, col.15, lines 48-60) and other taught examples of the invention(col.5, lines 17-22).

Regarding **claim 10**, Zhu teaches a silicone composition (col.3, lines 30-31) comprising:

100 parts by weight of an organopolysiloxane resin containing an average of greater than two alkenyl groups per molecule and having less than 1.5 mol % of silicon-bonded hydroxy groups (col.3, lines 32-36), wherein the resin is selected from a group including:

- a copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units, wherein the mole ratio of $R^2{}_3SiO_{1/2}$ units to $R^1SiO_{3/2}$ units is from 0.05 to 3.0 (col.3, lines 37-39);
- a copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2{}_2SiO_{2/2}$ units, wherein the mole ratio of $R^2{}_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2{}_2SiO_{2/2}$ units is 0.5 to 99 (col.3, lines 46-51).

Zhu further exemplifies crosslinking agents for the composition to include 1, 4-bis(dimethylsilyl)benzene (col.13, line 64) and an organohydrogensiloxane having the formula $PhSi(OSiMe_2H)_3$ (col.14, lines 1-2) and further teaches the composition

comprising an effective amount of an inorganic filler (col.2, line 63) and a catalytic amount of a hydrosilylation catalyst (col.2, line 64).

Zhu further exemplifies a mixture of an organopolysiloxane resin wherein the resin consists essentially of CH_2=$CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A) with 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60); this serves as the silicone composition (X) of the instant claim, wherein Resin A and crosslinking agent A serve as the organosiloxane compound A(ii) and the organohydrogensilicon compound B(i) of the instant claim respectively.

Though Zhu does not explicitly teach the silicone composition (Y) of the instant claim, since the list of organopolysiloxane resin and crosslinking agents taught by Zhu is limited, one of ordinary skill in the art would have formed different variations of the organopolysiloxane/crosslinking agent compositions, including one with the copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2{}_2SiO_{2/2}$ units with $PhSi(OSiMe_2H)_3$ as the crosslinking agent, by routine experimentation; wherein the copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units and $R^2{}_2SiO_{2/2}$ units and the $PhSi(OSiMe_2H)_3$ crosslinking agent the serve as the organosiloxane compound A'(i) and the organohydrogensiloxane compound B'(ii) of the instant claim respectively. This composition serves as the silicone composition (Y) of the instant claim.

Though modified Zhu does not teach a method of making an article of manufacture comprising the steps of the instant claim, modified Zhu further teaches the advantages of the silicone composition of the invention to include very low volatile organic compound content, less shrinkage during curing, curing rapidly at temperatures from

room temperature to moderately elevated temperatures without the formation of detectable by product and superior fracture toughness (col.10, line 47-col.11, line 1). Modified Zhu further teaches the composition having low flexural modulus (see Examples, TABLE 1, col.16, lines 35-45).

Nuzzo et al teaches providing a microstructure embodiment comprising a substrate, a patterned silicon-containing elastomer and a top layer comprising a silicon-containing elastomer (col.2, lines 60-63), by:

- depositing a material used to make a patterned silicon-containing elastomer film on a master (col.10, lines 63-65); elastomer precursors such as uncrosslinked polymer can be deposited onto a master and polymerization and/or crosslinking can then provide the patterned silicon-containing elastomer (col.8, lines 60-64), an example of which is the deposition of PDMS prepolymer to a thickness of 2.8 micrometers on a master (col.14, lines 65-66);
- depositing an elastomer precursor that allows a solid elastomer, the transfer pad, to be formed on the patterned silicon-containing elastomer (col.11, lines 12-16 and FIG. 3)
- separating the transfer pad from the master (col.11, lines 16-17).

Nuzzo et al further teaches suitable transfer pad material to include silicon-containing elastomers (col.8, lines 26-30) and polysiloxanes as examples of silicon-containing elastomers (col.5, lines 1-6).

Based on the low flexural modulus of the composition of modified Zhu, it can be inferred that the composition is a silicon-containing elastomer.

Considering the advantages of the composition of modified Zhu, particularly that the composition cures rapidly into a very low VOC, with superior fracture toughness product even at room temperature, one of ordinary skill in the art would have incorporated the composition of modified Zhu into the invention of Nuzzo et al as the patterned silicon-containing elastomer and the transfer pad; such incorporation would have amounted to nothing more than the use of a known element for its intended use in a known environment.

Though modified Zhu does not teach a method of making an article of manufacture comprising the steps of:

- (I) applying the silicone composition (Y) to a substrate;
- (V) applying the silicone composition (X) over the pattern of step (III).

Since the organopolysiloxane/crosslinking agent combinations taught by modified Zhu is limited, one of ordinary skill in the art would have formed different variations of the microstructure composition, including one in which the organopolysiloxane/crosslinking agent composition serves as composition (Y) of the instant claim is applied to the master (substrate) and the organopolysiloxane/crosslinking agent composition which serves as composition (X) is applied in step (IV) by routine experimentation.

Though modified Zhu does not teach a method of making an article of manufacture comprising the step of applying the silicone composition (Y) to a substrate to form a coating 1 to 500 micrometer thick, since modified Zhu teaches an example in which 2.8 micrometers of PDMS formed on the master (col.14, lines 65-66), one of ordinary skill in

the art would have formed the silicone composition (Y) on the master at the same thickness.

Though modified Zhu does not teach that the surface energy of the cured composition (Y) is lower than the cured composition (X), the surface energy of a composition is an inherent property of the composition; since the silicone compositions taught by modified Zhu meet the limitations of the corresponding compositions (X) and (Y) of the instant claim, the property the applicant claims is inherently present.

12. **Claims 6 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu (US 6,509,423) in view of Nuzzo et al (US 6,805,809), as applied to claims 4 and 7 respectively, in further view of Fujiki et al (US 5,013,772).

Regarding **claim 6**, modified Zhu teaches all the claim limitations as set forth above. The copolymer consisting essentially of $CH_2=CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A) and 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60) serve as A(ii) and B(i) of the instant claim respectively; the copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2{}_2SiO_{2/2}$ units, wherein the mole ratio of $R^2{}_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2{}_2SiO_{2/2}$ units is 0.5 to 99 (col.3, lines 46-51) and $PhSi(OSiMe_2H)_3$ serve as A'(i) and B'(ii) of the instant claim respectively; modified Zhu further teaches complexes of chloroplatinic acid as preferred hydrosilylation catalyst (col.9, lines 13-19) and a list of examples of inorganic fillers for the composition of the invention (col.7, line 66- col.8, line 17).

Though modified Zhu does not teach the method of making an article of manufacture wherein the B'(ii) is the organohydrogensiloxane compound of the instant claim, since the hydrocarbon group free of aliphatic unsaturation of the compounds in the examples of the invention is either methyl or phenyl, one of ordinary skill in the art would have used different variations of the organohydrogensiloxane compound, including one in which all the hydrocarbon groups are methyl by routine experimentation.

Modified Zhu does not teach the method of making an article of manufacture wherein the organosiloxane compound (A') is the organosiloxane compound of the instant claim.

Fujiki et al teaches an addition curable type silicone rubber composition containing MQ, MDQ and/or MDTQ resins in order to have a high tensile strength and tear strength silicone rubber composition (col.1, lines 54-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated M and Q siloxane units into the organosiloxane compound of modified Zhu which serves as A' of the instant claim, while still maintaining the combined $R^2_3SiO_{1/2}$ units with $R^1SiO_{3/2}$ units to $R^2_2SiO_{2/2}$ units ratio, in order to have a silicon-containing elastomer with a high tensile and tear strength. Moreover, one of ordinary skill in the art would have used methyl group and vinyl group for the hydrocarbon group free of aliphatic unsaturation and the alkenyl group respectively because the example taught by Fujiki et al contains these groups.

Regarding **claim 9**, modified Zhu teaches all the claim limitations as set forth above.

The copolymer consisting essentially of $CH_2=CHMe_2SiO_{1/2}$ units and $PhSiO_{3/2}$ units (Resin solution A) and 1, 4-bis(dimethylsilyl)benzene (crosslinking agent A) (Example 6, col.15, lines 48-60) serve as A(ii) and B(i) of the instant claim respectively; the copolymer consisting essentially of $R^2{}_3SiO_{1/2}$ units, $R^1SiO_{3/2}$ units, and $R^2{}_2SiO_{2/2}$ units, wherein the mole ratio of $R^2{}_3SiO_{1/2}$ units and $R^1SiO_{3/2}$ units combined to $R^2{}_2SiO_{2/2}$ units is 0.5 to 99 (col.3, lines 46-51) and $PhSi(OSiMe_2H)_3$ serve as A'(i) and B'(ii) of the instant claim respectively; modified Zhu further teaches complexes of chloroplatinic acid as preferred hydrosilylation catalyst (col.9, lines 13-19) and a list of examples of inorganic fillers for the composition of the invention (col.7, line 66- col.8, line 17).

Though modified Zhu does not teach the method of making an article of manufacture wherein the B'(ii) is the organohydrogensiloxane compound of the instant claim, since the hydrocarbon group free of aliphatic unsaturation of the compounds in the examples of the invention is either methyl or phenyl, one of ordinary skill in the art would have used different variations of the organohydrogensiloxane compound, including one in which all the hydrocarbon groups are methyl by routine experimentation.

Modified Zhu does not teach the method of making an article of manufacture wherein the organosiloxane compound (A') is the organosiloxane compound of the instant claim.

Fujiki et al teaches an addition curable type silicone rubber composition containing MQ, MDQ and/or MDTQ resins in order to have a high tensile strength and tear strength silicone rubber composition (col.1, lines 54-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated M and Q siloxane units into the organosiloxane

compound of modified Zhu which serves as A' of the instant claim, while still maintaining the combined $R^2_3SiO_{1/2}$ units with $R^1SiO_{3/2}$ units to $R^2_2SiO_{2/2}$ units ratio, in order to have a silicon-containing elastomer with a high tensile and tear strength. Moreover, one of ordinary skill in the art would have used methyl group and vinyl group for the hydrocarbon group free of aliphatic unsaturation and the alkenyl group respectively because the example taught by Fujiki et al contains these groups.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLATUNDE S. OJURONGBE whose telephone number is (571)270-3876. The examiner can normally be reached on Monday-Thursday, 7.15am-4.45pm, EST time, Alt Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571)272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

O.S.O

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